



SEQUENCE LISTING

USUT01.ST25.txt

<110> TSURUSHITA, Naoya
KUMAR, Shankar
VASQUEZ, Maximiliano

<120> Methods For Producing Humanized Chicken Antibodies (Amended)

<130> 149 US UT01

<140> 10/788,625

<141> 2004-02-26

<160> 104

<170> PatentIn version 3.3

<210> 1

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gcccggcaag gggctggaat acgtcgtga aattaccaac actggtagga ccagaagata 180

cgggggcggcg gtgaagggcc gtgccacat ctcgaggagc aacgggcaga gcacagttag 240

gctgcagctg aacaacctca gggctgagga caccggcacc tactactgcg ccagaagtag 300

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cgaagtcacg gtctcctc 378

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20 25 30

Ser Met Leu Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Tyr Val
35 40 45

Ala Glu Ile Thr Asn Thr Gly Arg Thr Arg Arg Tyr Gly Ala Ala Val
50 55 60

Lys Gly Arg Ala Thr Ile Ser Arg Asp Asn Gly Gln Ser Thr Val Arg
65 70 75 80

Leu Gln Leu Asn Asn Leu Arg Ala Glu Asp Thr Gly Thr Tyr Tyr Cys
85 90 95

Ala Arg Ser Ser Val Tyr Ser Cys Ser Tyr Gly Trp Cys Ala Gly Asn
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tgtcactgtg atctatgaca acaccaggag accctcggac atcccttcac gattctccgg 180
ttccaaatcc ggcgccacag ccacattaac catcactggg gtccaagccg acgacgaggc 240
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20 25 30

Gln Lys Ser Pro Gly Ser Ala Pro Val Thr Val Ile Tyr Asp Asn Thr

35

40

45

Arg Arg Pro Ser Asp Ile Pro Ser Arg Phe Ser Gly Ser Lys Ser Gly
 50 55 60

Ser Thr Ala Thr Leu Thr Ile Thr Gly Val Gln Ala Asp Asp Glu Ala
 65 70 75 80

Val Tyr Phe Cys Gly Thr Trp Asp Ser Ser Arg Val Gly Ile Phe Gly
 85 90 95

Ala Gly Thr Thr Leu Thr Val Leu
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 cctgcagatg aacagcctca gggctgagga caccgccgtg tactactgcg ccagaagtag 300
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 20 25 30

Ser Met Leu Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Tyr Val
 35 40 45

Ala Glu Ile Thr Asn Thr Gly Arg Thr Arg Arg Tyr Gly Ala Ala Val
 50 55 60

Lys Gly Arg Ala Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Val Tyr

65 70 75 80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys

85 90 95

Ala Arg Ser Ser Val Tyr Ser Cys Ser Tyr Gly Trp Cys Ala Gly Asn
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Ile Asn Ala Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
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tcctgtcact gtgatttatg acaacaccag gagaccctcg gacatccctt cagattctc   180
cggttccaaa tccggctcca cagccacatt aaccatcact ggagtccaag ccgaggacga   240
ggctgactat tactgtggga cctgggacag cagccgtgtt ggtatatatt gaggtgggac   300
aaagctgacc gtcct                                     315
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Thr Val Arg Ile Thr Cys Ser Gly Gly Tyr Ser Gly Tyr Tyr Gly Trp
20 25 30

Tyr Gln Gln Lys Pro Gly Gln Ala Pro Val Thr Val Ile Tyr Asp Asn
35 40 45

Thr Arg Arg Pro Ser Asp Ile Pro Ser Arg Phe Ser Gly Ser Lys Ser
50 55 60

Gly Ser Thr Ala Thr Leu Thr Ile Thr Gly Val Gln Ala Glu Asp Glu
 65 70 75 80

Ala Asp Tyr Tyr Cys Gly Thr Trp Asp Ser Ser Arg Val Gly Ile Phe
 85 90 95

Gly Gly Gly Thr Lys Leu Thr Val Leu
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<210> 18

<211> 31

<212> DNA

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<400> 18

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<210> 19

<211> 30

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<210> 24
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<212> DNA
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 gccgctgtaa c 71

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 ggttccaaat ccg 73

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gtatattgg agg 73

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ctggcgtcca ctctcagg

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<210> 38

<211> 77

<212> DNA

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<223> Synthetic Primer

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gggacaacgc caagaacac

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gttcttgccg ttgtcccta

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gtaacatcaa cgcattg

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Tyr Gly Trp Phe Gln Gln Lys Ser Pro Gly Ser Ala Pro Val Thr Val
 35 40 45

Ile Tyr Ser Asn Asp Lys Arg Pro Ser Asp Ile Pro Ser Arg Phe Ser
 50 55 60

Gly Ser Ala Ser Gly Ser Thr Ala Thr Leu Thr Ile Thr Gly Val Gln
 65 70 75 80

Ala Asp Asp Glu Ala Val Tyr Phe Cys Gly Ser His Asp Ser Asn Val
 85 90 95

Gly Val Phe Gly Ala Gly Thr Thr Leu Thr Val Leu
 100 105

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 <212> PRT
 <213> Chicken

<400> 48
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1 5 10 15

Gly Leu Ser Leu Val Cys Lys Ala Ser Gly Phe Asp Phe Ser Asn Tyr
 20 25 30

Gln Leu Gln Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45

Gly Gly Ile Gly Ser Ser Gly Ser Ser Thr Tyr Tyr Gly Ala Ala Val
 50 55 60

Lys Gly Arg Ala Thr Ile Ser Arg Asp Asn Gly Gln Ser Thr Val Arg
 65 70 75 80

Leu Gln Leu Asn Asn Leu Arg Ala Glu Asp Thr Gly Thr Tyr Tyr Cys
 85 90 95

Thr Arg Gly Val Ser Pro Tyr Ser Cys Trp Tyr Ala Gly Arg Thr Ser
 100 105 110

Tyr Thr Cys His Ala Tyr Thr Ala Gly Ser Ile Asp Ala Trp Gly His
 115 120 125

Gly Thr Glu Val Ile Val Ser Ser
 130 135

<210> 49
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 <212> PRT
 <213> Chicken

<400> 49

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 1 5 10 15

Thr Val Arg Ile Thr Cys Pro Gly Gly Gly Ile Tyr Ala Gly Arg Tyr
 20 25 30

Tyr Gly Tyr Gly Trp Phe Gln Gln Lys Pro Gly Gln Ala Pro Val Thr
 35 40 45

Val Ile Tyr Ser Asn Asp Lys Arg Pro Ser Asp Ile Pro Ser Arg Phe
 50 55 60

Ser Gly Ser Ala Ser Gly Ser Thr Ala Ser Leu Thr Ile Thr Gly Ala
65 70 75 80

Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Gly Ser His Asp Ser Asn
85 90 95

Val Gly Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu
100 105

<210> 50

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<212> PRT

<213> Chicken

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1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Asp Phe Ser Asn Tyr
20 25 30

Gln Leu Gln Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

Gly Gly Ile Gly Ser Ser Gly Ser Ser Thr Tyr Tyr Gly Ala Ala Val
50 55 60

Lys Gly Arg Ala Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Val Tyr
65 70 75 80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Thr Arg Gly Val Ser Pro Tyr Ser Cys Trp Tyr Ala Gly Arg Thr Ser
100 105 110

Tyr Thr Cys His Ala Tyr Thr Ala Gly Ser Ile Asp Ala Trp Gly Gln
115 120 125

Gly Thr Leu Val Thr Val Ser Ser
130 135

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<220>
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 gtccacagg ttc 73

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 <211> 75
 <212> DNA
 <213> Artificial

<220>
 <223> Synthetic Primer

<400> 52
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<210> 53
 <211> 73
 <212> DNA
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<220>
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<210> 54
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<220>
 <223> Synthetic Primer

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<210> 55
 <211> 70
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 gctccgcatc 70

<210> 56
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<210> 57
 <211> 66
 <212> DNA
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 atttgg 66

<210> 58
 <211> 71
 <212> DNA
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<400> 58
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<400> 59
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<220>
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<400> 60
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 <211> 80
 <212> DNA
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<220>
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<400> 61
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 tgcactctga ggtgcagctg 80

<210> 62
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 <213> Artificial

<220>
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<210> 63
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gccaggctcc agggaagggg 80

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<211> 80

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<223> Synthetic Primer

<400> 64

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ccccttcct ggagcctggc 80

<210> 65

<211> 80

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cagtgtatct gcaaataaac 80

<210> 66

<211> 80

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ttcatttga gatacactga 80

<210> 67

<211> 80

<212> DNA

<213> Artificial

<220>

<223> Synthetic Primer

<400> 67

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tatactgctg gtagcatcga

80

<210> 68

<211> 80

<212> DNA

<213> Artificial

<220>

<223> Synthetic Primer

<400> 68

tctagaagta cagcagactc acctgaggag acggtgacca gggttccctg gcccacatcg 60

tcgatgctac cagcagtata

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<220>

<223> Synthetic Primer

<400> 69

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26

<210> 70

<211> 28

<212> DNA

<213> Artificial

<220>

<223> Synthetic Primer

<400> 70

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28

<210> 71

<211> 421

<212> DNA

<213> Chicken

<400> 71

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tactggggc tcaggcgga gatgaggctg actattactg tgggagccac gacagcaatg 360
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421

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<400> 72

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20 25 30

Ala Leu Gly Gln Thr Val Arg Ile Thr Cys Pro Gly Gly Gly Ile Tyr
35 40 45

Ala Gly Arg Tyr Tyr Gly Tyr Gly Trp Phe Gln Gln Lys Pro Gly Gln
50 55 60

Ala Pro Val Thr Val Ile Tyr Ser Asn Asp Lys Arg Pro Ser Asp Ile
65 70 75 80

Pro Ser Arg Phe Ser Gly Ser Ala Ser Gly Ser Thr Ala Ser Leu Thr
85 90 95

Ile Thr Gly Ala Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Gly Ser
100 105 110

His Asp Ser Asn Val Gly Val Phe Gly Gly Gly Thr Lys Leu Thr Val
115 120 125

Leu

<210> 73
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 <212> DNA
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<400> 73
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 tgcactctga ggtgcagctg gtggagctg ggggaggcct ggtccagcct ggggggtccc 120
 tgagactctc ctgtgcagcc tctggattcg actttagtaa ctatcagtg cagtgggtcc 180
 gccaggctcc agggaagggg ctggagtggg tgggtggtat tggcagcagt ggcagtagca 240
 catactacgg agctgcgggt aagggccgag ccaccatctc cagagacaac gccaagaact 300
 cagtgtatct gcaaataaac agcctgagag ccgaggacac ggctgtgtat tactgtacca 360
 gaggtgttag tccttacagc tgttggtatg ccggccgtac tagttatact tgtcatgcat 420
 atactgctgg tagcatcgac gcatggggcc agggaaccct ggtcaccgtc tcctcaggtg 480
 agtctgctgt acttctaga 499

<210> 74
 <211> 155
 <212> PRT
 <213> Chicken

<400> 74
 Met Gly Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
 1 5 10 15
 Val His Ser Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln
 20 25 30
 Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Asp Phe
 35 40 45
 Ser Asn Tyr Gln Leu Gln Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
 50 55 60
 Glu Trp Val Gly Gly Ile Gly Ser Ser Gly Ser Ser Thr Tyr Tyr Gly
 65 70 75 80
 Ala Ala Val Lys Gly Arg Ala Thr Ile Ser Arg Asp Asn Ala Lys Asn

85

90

95

Ser Val Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val
 100 105 110

Tyr Tyr Cys Thr Arg Gly Val Ser Pro Tyr Ser Cys Trp Tyr Ala Gly
 115 120 125

Arg Thr Ser Tyr Thr Cys His Ala Tyr Thr Ala Gly Ser Ile Asp Ala
 130 135 140

Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
 145 150 155

<210> 75

<211> 406

<212> DNA

<213> Chicken

<400> 75

acgcgtctcg accaccatgg agaaagacac actcctgcta tgggtcctac ttctctgggt 60

tccaggttcc acaggtgctg tgactcagcc ggctcgggtg tcagcaaacc caggagaaac 120

cgtaagatc acctgctccg ggggtagcta ctatggctgg taccagcaga agtctcctgg 180

cagtgccct gtcactgtga ttatgacaa cgacaagaga ccctcggaca tcccttcacg 240

attctccggt tccaaatccg gctccacggg cacattaacc atcactgggg tccaagccga 300

ggatgaggct gtctatttct gtgggagtgc agacagcgcc tatgttgga tatttggggc 360

cgggacaacc ctgaccgtcc taagtaagta gaatccaaag tctaga 406

<210> 76

<211> 122

<212> PRT

<213> Chicken

<400> 76

Met Glu Lys Asp Thr Leu Leu Leu Trp Val Leu Leu Leu Trp Val Pro
 1 5 10 15

Gly Ser Thr Gly Ala Leu Thr Gln Pro Ala Ser Val Ser Ala Asn Pro
 20 25 30

Gly Glu Thr Val Lys Ile Thr Cys Ser Gly Gly Ser Tyr Tyr Gly Trp

35

40

45

Tyr Gln Gln Lys Ser Pro Gly Ser Ala Pro Val Thr Val Ile Tyr Asp
 50 55 60

Asn Asp Lys Arg Pro Ser Asp Ile Pro Ser Arg Phe Ser Gly Ser Lys
 65 70 75 80

Ser Gly Ser Thr Gly Thr Leu Thr Ile Thr Gly Val Gln Ala Glu Asp
 85 90 95

Glu Ala Val Tyr Phe Cys Gly Ser Ala Asp Ser Ala Tyr Val Gly Ile
 100 105 110

Phe Gly Ala Gly Thr Thr Leu Thr Val Leu
 115 120

<210> 77

<211> 482

<212> DNA

<213> Chicken

<400> 77

acgcgtctcg accaccatgg gatggagctg gatctttctc ttctctctgt caggaactgc 60

tggcgctcac tctgccgtga cgttggacga gtccgggggc ggctccaga cgcccgagg 120

agcgctcagc ctgcttgca gggcctccgg gttctctatc ggcagttaca acatgcactg 180

ggtgcgacag gcgcccggca aggggctgga gtgggtcgct ggtattagcg gtgctgtag 240

tcgcacagca tggtaggggg cggcggtgaa gggccgtgcc accatctcga gggacaacgg 300

gcagagcaca gtgaggctgc agctgaacaa cctcagggcc gaggacaccg gcacctacta 360

ctgcgcaaaa gactatggtg gtagtggtc cccatggtat ggttggggtg ctgctagttg 420

gatcgacgca tggggccacg ggaccgaagt catcgtctcc tccgtaaga atggcgtcta 480

ga

482

<210> 78

<211> 149

<212> PRT

<213> Chicken

<400> 78

Met Gly Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly

1 5 10 15

Val His Ser Ala Val Thr Leu Asp Glu Ser Gly Gly Gly Leu Gln Thr
 20 25 30

Pro Gly Gly Ala Leu Ser Leu Val Cys Arg Ala Ser Gly Phe Ser Ile
 35 40 45

Gly Ser Tyr Asn Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
 50 55 60

Glu Trp Val Ala Gly Ile Ser Gly Ala Gly Ser Arg Thr Ala Trp Tyr
 65 70 75 80

Gly Ala Ala Val Lys Gly Arg Ala Thr Ile Ser Arg Asp Asn Gly Gln
 85 90 95

Ser Thr Val Arg Leu Gln Leu Asn Asn Leu Arg Ala Glu Asp Thr Gly
 100 105 110

Thr Tyr Tyr Cys Ala Lys Asp Tyr Gly Gly Ser Gly Ser Pro Trp Tyr
 115 120 125

Gly Trp Gly Ala Ala Ser Trp Ile Asp Ala Trp Gly His Gly Thr Glu
 130 135 140

Val Ile Val Ser Ser
 145

<210> 79
 <211> 102
 <212> PRT
 <213> Chicken

<400> 79

Ala Leu Thr Gln Pro Ala Ser Val Ser Ala Asn Pro Gly Glu Thr Val
 1 5 10 15

Lys Ile Thr Cys Ser Gly Gly Ser Tyr Tyr Gly Trp Tyr Gln Gln Lys
 20 25 30

Ser Pro Gly Ser Ala Pro Val Thr Val Ile Tyr Asp Asn Asp Lys Arg
 35 40 45

Pro Ser Asp Ile Pro Ser Arg Phe Ser Gly Ser Lys Ser Gly Ser Thr
50 55 60

Gly Thr Leu Thr Ile Thr Gly Val Gln Ala Glu Asp Glu Ala Val Tyr
65 70 75 80

Phe Cys Gly Ser Ala Asp Ser Ala Tyr Val Gly Ile Phe Gly Ala Gly
85 90 95

Thr Thr Leu Thr Val Leu
100

<210> 80
<211> 103
<212> PRT
<213> Homo sapiens

<400> 80

Ser Ser Glu Leu Thr Gln Asp Pro Ala Val Ser Val Ala Leu Gly Gln
1 5 10 15

Thr Val Arg Ile Thr Cys Ser Gly Gly Ser Tyr Tyr Gly Trp Tyr Gln
20 25 30

Gln Lys Pro Gly Gln Ala Pro Val Thr Val Ile Tyr Asp Asn Asp Lys
35 40 45

Arg Pro Ser Asp Ile Pro Ser Arg Phe Ser Gly Ser Lys Ser Gly Ser
50 55 60

Thr Gly Ser Leu Thr Ile Thr Gly Ala Gln Ala Glu Asp Glu Ala Asp
65 70 75 80

Tyr Tyr Cys Gly Ser Ala Asp Ser Ala Tyr Val Gly Ile Phe Gly Gly
85 90 95

Gly Thr Lys Leu Thr Val Leu
100

<210> 81
<211> 130
<212> PRT

<213> Chicken

<400> 81

Ala Val Thr Leu Asp Glu Ser Gly Gly Gly Leu Gln Thr Pro Gly Gly
 1 5 10 15

Ala Leu Ser Leu Val Cys Arg Ala Ser Gly Phe Ser Ile Gly Ser Tyr
 20 25 30

Asn Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45

Ala Gly Ile Ser Gly Ala Gly Ser Arg Thr Ala Trp Tyr Gly Ala Ala
 50 55 60

Val Lys Gly Arg Ala Thr Ile Ser Arg Asp Asn Gly Gln Ser Thr Val
 65 70 75 80

Arg Leu Gln Leu Asn Asn Leu Arg Ala Glu Asp Thr Gly Thr Tyr Tyr
 85 90 95

Cys Ala Lys Asp Tyr Gly Gly Ser Gly Ser Pro Trp Tyr Gly Trp Gly
 100 105 110

Ala Ala Ser Trp Ile Asp Ala Trp Gly His Gly Thr Glu Val Ile Val
 115 120 125

Ser Ser
 130

<210> 82

<211> 130

<212> PRT

<213> Homo sapiens

<400> 82

Glu Val Gln Leu Leu Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
 1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Ser Ile Gly Ser Tyr
 20 25 30

Asn Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val

35

40

45

Ala Gly Ile Ser Gly Ala Gly Ser Arg Thr Ala Trp Tyr Gly Ala Ala
 50 55 60

Val Lys Gly Arg Ala Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Val
 65 70 75 80

Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr
 85 90 95

Cys Ala Lys Asp Tyr Gly Gly Ser Gly Ser Pro Trp Tyr Gly Trp Gly
 100 105 110

Ala Ala Ser Trp Ile Asp Ala Trp Gly Gln Gly Thr Leu Val Thr Val
 115 120 125

Ser Ser
 130

<210> 83
 <211> 403
 <212> DNA
 <213> Homo sapiens

<400> 83
 acgcgtccac catggagaaa gacacactcc tgctgtgggt cctacttctc tgggttcag 60
 gtccacagg ttctctgag ctgactcagg accctgctgt gtctgtggcc ttgggacaga 120
 cagtcaggat cacatgctcc gggggtagct actatggctg gtaccagcag aagccaggac 180
 aggcccctgt aactgtcatc tatgacaacg acaagagacc ctcgacatc ccttcacgat 240
 tctctggctc caaatcaggc tccacaggct cctgacat cactggggct caggcggaag 300
 atgaggctga ctattactgt gggagtgcag acagcgcta tgttggtata ttggcggtg 360
 ggacaaagct gaccgtccta ggtgagtcct ttctccctct aga 403

<210> 84
 <211> 123
 <212> PRT
 <213> Homo sapiens

<400> 84

Met Glu Lys Asp Thr Leu Leu Leu Trp Val Leu Leu Leu Trp Val Pro

<210> 86
 <211> 149
 <212> PRT
 <213> Homo sapiens

<400> 86

Met Gly Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
 1 5 10 15

Val His Ser Glu Val Gln Leu Leu Glu Ser Gly Gly Gly Leu Val Gln
 20 25 30

Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Ser Ile
 35 40 45

Gly Ser Tyr Asn Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
 50 55 60

Glu Trp Val Ala Gly Ile Ser Gly Ala Gly Ser Arg Thr Ala Trp Tyr
 65 70 75 80

Gly Ala Ala Val Lys Gly Arg Ala Thr Ile Ser Arg Asp Asn Ala Lys
 85 90 95

Asn Thr Val Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala
 100 105 110

Val Tyr Tyr Cys Ala Lys Asp Tyr Gly Gly Ser Gly Ser Pro Trp Tyr
 115 120 125

Gly Trp Gly Ala Ala Ser Trp Ile Asp Ala Trp Gly Gln Gly Thr Leu
 130 135 140

Val Thr Val Ser Ser
 145

<210> 87
 <211> 6
 <212> DNA
 <213> Artificial

<220>
 <223> Restriction Site

<400> 87

acgcgt

6

<210> 88

<211> 6

<212> DNA

<213> Artificial

<220>

<223> Restriction Site

<400> 88

tctaga

6

<210> 89

<211> 79

<212> PRT

<213> Homo sapiens

<400> 89

Ser Ser Glu Leu Thr Gln Asp Pro Ala Val Ser Val Ala Leu Gly Gln

1 5 10 15

Thr Val Arg Ile Thr Cys Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro

20 25 30

Val Leu Val Ile Tyr Gly Ile Pro Asp Arg Phe Ser Gly Ser Ser Ser

35 40 45

Gly Asn Thr Ala Ser Leu Thr Ile Thr Gly Ala Gln Ala Glu Asp Glu

50 55 60

Ala Asp Tyr Tyr Cys Phe Gly Gly Gly Thr Lys Leu Thr Val Leu

65 70 75

<210> 90

<211> 87

<212> PRT

<213> Homo sapiens

<400> 90

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly

1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Trp Val

20 25 30

Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val Ala Arg Phe Thr Ile
35 40 45

Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr Leu Gln Met Asn Ser Leu
50 55 60

Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg Trp Gly Gln Gly
65 70 75 80

Thr Leu Val Thr Val Ser Ser
85

<210> 91
<211> 412
<212> DNA
<213> Chicken

<400> 91
acgcgtctcg accaccatgg agaaagacac actcctgcta tgggtcctac ttctctgggt 60
tccaggttcc acaggtgcgc tgactcagcc ggcctcagtg tcagcaaacc tgggaggaac 120
cgtaagatc acctgctccg ggggttacag cggctattat ggctggtacc agcagaaatc 180
acctggcagt gccctgtca ctgtgatcta tgacaacacc aggagaccct cggacatccc 240
ttcacgattc tccggttcca aatccggctc cacagccaca ttaaccatca ctgggggtcca 300
agccgacgac gaggtgtct atttctgtgg gacctgggac agcagccgtg ttggtatatt 360
tggggccggg acaaccctga cgtcctaag taagtagaat ccaaagtcta ga 412

<210> 92
<211> 124
<212> PRT
<213> Chicken

<400> 92

Met Glu Lys Asp Thr Leu Leu Leu Trp Val Leu Leu Leu Trp Val Pro
1 5 10 15

Gly Ser Thr Gly Ala Leu Thr Gln Pro Ala Ser Val Ser Ala Asn Leu
20 25 30

Gly Gly Thr Val Lys Ile Thr Cys Ser Gly Gly Tyr Ser Gly Tyr Tyr
35 40 45

Gly Trp Tyr Gln Gln Lys Ser Pro Gly Ser Ala Pro Val Thr Val Ile
50 55 60

Tyr Asp Asn Thr Arg Arg Pro Ser Asp Ile Pro Ser Arg Phe Ser Gly
65 70 75 80

Ser Lys Ser Gly Ser Thr Ala Thr Leu Thr Ile Thr Gly Val Gln Ala
85 90 95

Asp Asp Glu Ala Val Tyr Phe Cys Gly Thr Trp Asp Ser Ser Arg Val
100 105 110

Gly Ile Phe Gly Ala Gly Thr Thr Leu Thr Val Leu
115 120

<210> 93
<211> 470
<212> DNA
<213> Chicken

<400> 93
acgcgtctcg accaccatgg gatggagctg gatctttctc ttctctctgt caggaactgc 60
tggcgctcac tctgccgtga cgttggaaga gtctgggggc ggctccaga cgcccgagg 120
agcgctcagc ctgcttgca aggcctccgg gttcaccttc agtagttaca gcatgctctg 180
ggtgcgacag gcgcccggca aggggctgga atacgtcgt gaaattacca acactggtag 240
gaccagaaga tacggggcgg cgtgaaggg ccgtgccacc atctcgaggg acaacgggca 300
gagcacagtg aggctgcagc tgaacaacct cagggctgag gacaccggca cctactactg 360
cgccagaagt agtgtttatt ctgttttta tgggtggtgt gctggaaca tcaacgcatg 420
gggccacggg accgaagtca tcgtctctc cgtaagaat ggcgtctaga 470

<210> 94
<211> 145
<212> PRT
<213> Chicken

<400> 94

Met Gly Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
1 5 10 15

Val His Ser Ala Val Thr Leu Asp Glu Ser Gly Gly Gly Leu Gln Thr

20

25

30

Pro Gly Gly Ala Leu Ser Leu Val Cys Lys Ala Ser Gly Phe Thr Phe
 35 40 45

Ser Ser Tyr Ser Met Leu Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
 50 55 60

Glu Tyr Val Ala Glu Ile Thr Asn Thr Gly Arg Thr Arg Arg Tyr Gly
 65 70 75 80

Ala Ala Val Lys Gly Arg Ala Thr Ile Ser Arg Asp Asn Gly Gln Ser
 85 90 95

Thr Val Arg Leu Gln Leu Asn Asn Leu Arg Ala Glu Asp Thr Gly Thr
 100 105 110

Tyr Tyr Cys Ala Arg Ser Ser Val Tyr Ser Cys Ser Tyr Gly Trp Cys
 115 120 125

Ala Gly Asn Ile Asn Ala Trp Gly His Gly Thr Glu Val Ile Val Ser
 130 135 140

Ser
 145

<210> 95
 <211> 409
 <212> DNA
 <213> Homo sapiens

<400> 95
 acgcgtccac catggagaaa gacacactcc tgctatgggt cctactctc tgggttcag 60
 gtccacagg tagctctgag ctgactcagc cgccttcagt gtcagtggcc ctgggacaga 120
 ccgtcaggat cacctgctcc ggaggttaca gcggctatta tggctggtac cagcagaaac 180
 ctggccagge tctgtcact gtgattatg acaacaccag gagaccctcg gacatccctt 240
 cagcattctc cgggtccaaa tccggctcca cagccacatt aaccatcact ggagtccaag 300
 ccgaggacga ggctgactat tactgtggga cctgggacag cagccgtgtt ggtatattg 360
 gaggtgggac aaagctgacc gtcttagtg agtctctct ccctctaga 409

<210> 96
 <211> 125
 <212> PRT
 <213> Homo sapiens

<400> 96

Met Glu Lys Asp Thr Leu Leu Leu Trp Val Leu Leu Leu Trp Val Pro
 1 5 10 15

Gly Ser Thr Gly Ser Ser Glu Leu Thr Gln Pro Pro Ser Val Ser Val
 20 25 30

Ala Leu Gly Gln Thr Val Arg Ile Thr Cys Ser Gly Gly Tyr Ser Gly
 35 40 45

Tyr Tyr Gly Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Val Thr Val
 50 55 60

Ile Tyr Asp Asn Thr Arg Arg Pro Ser Asp Ile Pro Ser Arg Phe Ser
 65 70 75 80

Gly Ser Lys Ser Gly Ser Thr Ala Thr Leu Thr Ile Thr Gly Val Gln
 85 90 95

Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Gly Thr Trp Asp Ser Ser Arg
 100 105 110

Val Gly Ile Phe Gly Gly Gly Thr Lys Leu Thr Val Leu
 115 120 125

<210> 97
 <211> 469
 <212> DNA
 <213> Homo sapiens

<400> 97

acgcgtccac catgggatgg agctggatct ttctcttct cctgtcagga actgctggcg 60
 tccactctga ggtgcagttg gtggagtccg gaggtggact cgtgcagcct ggaggaagcc 120
 tcaggctcag ctgcgccgcc tccgggttca cttcagtag ttacagcatg ctctgggtgc 180
 gacaggcgcc tggcaagga ctggaatacg tcgctgaaat taccaacact ggtaggacca 240
 gaagatacgg agctgcggtg aagggccgtg ccaccatctc gagggacaac gccaagaaca 300
 cagtgtacct gcagatgaac agcctcaggg ctgaggacac cgccgtgtac tactgcgcca 360

gaagtagtgt ttattctgt tcttatgggt ggtgtgctgg taacatcaac gcatggggcc 420

aggggaaccct ggtcaccgtc tcttccggtg agtcctcaca acctctaga 469

<210> 98

<211> 145

<212> PRT

<213> Homo sapiens

<400> 98

Met Gly Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
1 5 10 15

Val His Ser Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln
20 25 30

Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
35 40 45

Ser Ser Tyr Ser Met Leu Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
50 55 60

Glu Tyr Val Ala Glu Ile Thr Asn Thr Gly Arg Thr Arg Arg Tyr Gly
65 70 75 80

Ala Ala Val Lys Gly Arg Ala Thr Ile Ser Arg Asp Asn Ala Lys Asn
85 90 95

Thr Val Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val
100 105 110

Tyr Tyr Cys Ala Arg Ser Ser Val Tyr Ser Cys Ser Tyr Gly Trp Cys
115 120 125

Ala Gly Asn Ile Asn Ala Trp Gly Gln Gly Thr Leu Val Thr Val Ser
130 135 140

Ser
145

<210> 99

<211> 423

<212> DNA

<213> Chicken

<400> 99

acgcgtctcg accaccatgg agaaagacac actcctgcta tgggtcctac ttctctgggt 60
 tccaggttcc acaggtgctc tgactcagcc ggcctcagtg tcagcaaacc cgggagaaac 120
 cgtcaagatc acctgccccg ggggtggcat ctatgctgga aggtactatg gttatggctg 180
 gtccagcag aagtctctg gcagtgtccc tgcactgtg atctatagca acgacaagag 240
 accctggag atcccttcac gattctccg ctccgcatcc ggctccacag ccacattaac 300
 catcactggg gtccaagccg acgacgagcg tctctattc tgtgggagcc acgacagcaa 360
 tgttggtgta ttggggccg ggacaaccct gaccgtccta agtaagtaga atccaaatct 420
 aga 423

<210> 100

<211> 128

<212> PRT

<213> Chicken

<400> 100

Met Glu Lys Asp Thr Leu Leu Leu Trp Val Leu Leu Leu Trp Val Pro
 1 5 10 15

Gly Ser Thr Gly Ala Leu Thr Gln Pro Ala Ser Val Ser Ala Asn Pro
 20 25 30

Gly Glu Thr Val Lys Ile Thr Cys Pro Gly Gly Gly Ile Tyr Ala Gly
 35 40 45

Arg Tyr Tyr Gly Tyr Gly Trp Phe Gln Gln Lys Ser Pro Gly Ser Ala
 50 55 60

Pro Val Thr Val Ile Tyr Ser Asn Asp Lys Arg Pro Ser Asp Ile Pro
 65 70 75 80

Ser Arg Phe Ser Gly Ser Ala Ser Gly Ser Thr Ala Thr Leu Thr Ile
 85 90 95

Thr Gly Val Gln Ala Asp Asp Glu Ala Val Tyr Phe Cys Gly Ser His
 100 105 110

Asp Ser Asn Val Gly Val Phe Gly Ala Gly Thr Thr Leu Thr Val Leu

115

120

125

<210> 101
 <211> 500
 <212> DNA
 <213> Chicken

<400> 101
 acgcgtctcg accaccatgg gatggagctg gatctttctc ttctctctgt caggaactgc 60
 tggcgtccac tctgccgtga cgttggacga gtccgggggc ggctccaga cgcccgagg 120
 agggctcagc ctgcttgca aggcctccgg gtgcacttc agcaactatc agttgcagt 180
 ggtgcgccag gcgcccggca aggggctgga gtgggtcggt ggtattggca gcagtggcag 240
 tagcacatac tacggggcgg cggtgaaggg ccgtgccacc atctcgaggg acaacgggca 300
 gagcacagtg agactgcagc tgaacaacct cagggtgag gacaccggca cctactactg 360
 caccagaggt gttagtcctt acagctgttg gtatgccggc cgtactagtt atactgtca 420
 tgcataact gctgtagca tcgacgcatg gggccacggg accgaagtca tcgtctctc 480
 cggtagaat ggcgtctaga 500

<210> 102
 <211> 155
 <212> PRT
 <213> Chicken

<400> 102
 Met Gly Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
 1 5 10 15
 Val His Ser Ala Val Thr Leu Asp Glu Ser Gly Gly Gly Leu Gln Thr
 20 25 30
 Pro Gly Gly Gly Leu Ser Leu Val Cys Lys Ala Ser Gly Phe Asp Phe
 35 40 45
 Ser Asn Tyr Gln Leu Gln Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
 50 55 60
 Glu Trp Val Gly Gly Ile Gly Ser Ser Gly Ser Ser Thr Tyr Tyr Gly
 65 70 75 80
 Ala Ala Val Lys Gly Arg Ala Thr Ile Ser Arg Asp Asn Gly Gln Ser

85

90

95

Thr Val Arg Leu Gln Leu Asn Asn Leu Arg Ala Glu Asp Thr Gly Thr
 100 105 110

Tyr Tyr Cys Thr Arg Gly Val Ser Pro Tyr Ser Cys Trp Tyr Ala Gly
 115 120 125

Arg Thr Ser Tyr Thr Cys His Ala Tyr Thr Ala Gly Ser Ile Asp Ala
 130 135 140

Trp Gly His Gly Thr Glu Val Ile Val Ser Ser
 145 150 155

<210> 103

<211> 87

<212> PRT

<213> Homo sapiens

<400> 103

Glu Val Gln Leu Leu Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
 1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Trp Val
 20 25 30

Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val Ser Arg Phe Thr Ile
 35 40 45

Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr Leu Gln Met Asn Ser Leu
 50 55 60

Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala Lys Trp Gly Gln Gly
 65 70 75 80

Thr Leu Val Thr Val Ser Ser
 85

<210> 104

<211> 27

<212> PRT

<213> Artificial

<220>

<223> Linker

<400> 104

Ala Met Ala Ala Ser Thr Ser Ser Gly Gly Gly Gly Ser Gly Gly Gly
1 5 10 15

Gly Ser Gly Gly Gly Gly Ser Glu Leu Arg Ser
20 25